Projections of the State Population By Age, Gender and Race/Ethnicity: 2000-2030
March 2006

Race, minority, and ethnic estimates and forecasts should be interpreted with caution. Census data on race and ethnic status are based on respondents' self-identification. This identification may change between censuses for people who might claim membership in more than one group. Definitions and collection procedures have also changed. This limits the reliability of birth, death, and migration trends used to develop population forecasts.

HIGHLIGHTS

This report includes population projections of Washington State by age, gender and race/ethnic groups for five-year intervals for the period 2000-2030. These numbers are based on Census 2000 and projected forward using the cohort component method. Assumptions are made for future fertility, life expectancy, net migration, and immigration levels. The projections for race/ethnicity are also developed within a framework provided by the state population forecast published in November 2005. The projected components of change for each race/ethnic group are compared and reconciled with the state population forecast at every five-year time interval between 2005-2030. The race/ethnic categories adhere to those defined by the federal Office of Management of Budget (OMB) in 1997. The single exclusive race categories are used. For example, White category refers to people who select only "White" on the census form. Due to input data limitations, Asian and Native Hawaiian and Pacific Islander (NHOPI) categories are combined into an Asian and Pacific Islanders (API) category. The multiracial population is projected as one group named " Two or More Races".

Trend of Population Growth: 2000 to 2030

Asian and Pacific Islander and Hispanic populations will continue to be fast growing minority groups. The total state population is projected to grow by 42.2 percent from 5,894,121 in 2000 to about 8,544,700 in 2030. The race/ethnic composition of the population is projected to change in the future as the Black, Asian/Pacific Islander, Two or More Races and Hispanic populations increase in proportion to the total population.

- The Hispanic population is the fastest growing among all the race/ethnic groups. Its population is expected to grow 150 percent, from 441,509 in 2000 to about 1,099,540 in 2030.
- The most rapidly growing racial group is "Two or More" race category, which may have an increase of 160 percent. Its population is projected to grow from 160,500 in 2000 to 419,500 in 2030.
- The Asian and Pacific Islanders population is projected to have an increase of 132 percent to reach approximately 825,000 by the year 2030.
- The Black population is expected to reach 317,800 by 2030, a 60 percent increase from 199,200 in 2000.
- The American Indian, and Alaska Native (AIAN) population is projected to increase 50.1 percent, from 96,900 in 2000 to 146,000 by 2030.
- The White population is projected to grow from 5,081,700 to about 6,836,300 – a 34.5 percent increase.

Washington State Population and Population Change By Race/Ethnicity (in Thousands):

	RACE						ETHNICITY
	TOTAL	White	Black	AIAN	API	Two or More	Hispanic Origin
2000	5,894.1	5,081.7	199.2	96.9	355.8	160.5	441.5
2010	6,811.2	5,712.9	246.2	113.8	516.4	222.0	651.0
2020	7,725.4	6,328.7	285.2	131.8	671.7	308.0	871.9
2030	8,544.7	6,836.3	317.8	145.9	825.2	419.5	1,099.5

Percent Change per Every Ten Year Interval:

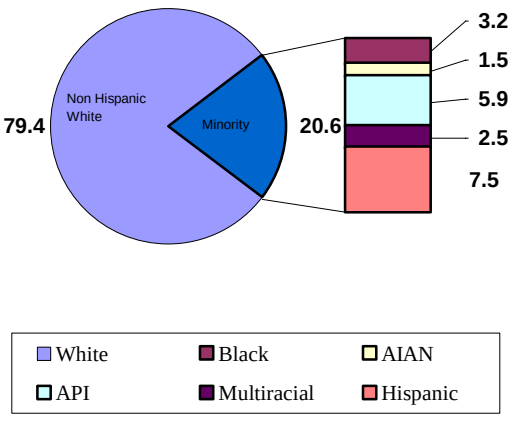
2010	15.56	12.42	23.59	17.40	45.12	38.35	47.45
2020	13.42	10.78	15.87	15.79	30.09	38.71	33.93
2030	10.61	8.02	11.42	10.74	22.86	36.21	26.11

Growth 2000-2030

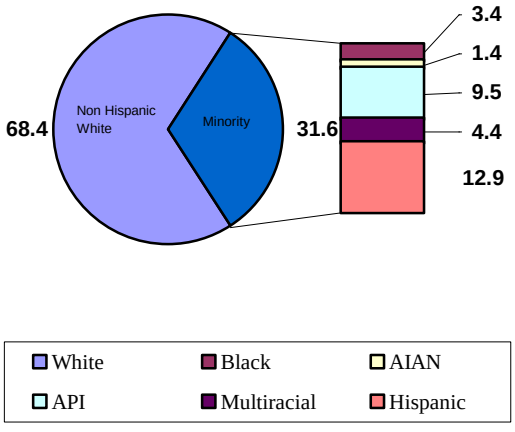
Number	2,650.6	1,754.5	118.6	49.0	469.4	259.0	658.0
Percent	44.97	34.53	59.57	50.53	131.93	161.40	149.04

The Washington population is becoming more diversified. In 2000, the Non Hispanic White population was 4,679,830, or 79.4 percent of the total population. There were 1,214,300 enumerated as minority population, which composed of 20.6 percent of the total Washington residents. By 2030, the Non Hispanic White population is likely to grow to 5,846,700. The share of this population to the total will decrease by 11 percent to 68.4 percent. Meanwhile, the minority population is projected to increase to approximately 2,698,000. Its percent share to the total population will increase to 31.6 percent. Thus, the minority in Washington will increase from one in five to one in three. High immigration rate is the major contributor for the fast growth of API population. The rapid increase of Hispanic population is due to high fertility as well as large migration volume. (See Table A in Appendix for details).

Percentage of Non Hispanic White and Minority Race Categories: 2000



Percentage of Non Hispanic White and Minority Race Categories: 2030



Age Distribution Among Race/Ethnic Population

Washington population is aging as the baby boomers turn elderly. The oldest of the post-World War II baby boomers turn age 60 in 2006. It is a signal that the baby boomer era is turning into an elderly era. The age 65 and over population is projected to increase approximately from 662,200 people in 2000 to 1,660,100 in 2030. This means while 11.2 percent of the total population were 65 and over in 2000, there will be 19.4 percent, or almost one out of five, by 2030. The most dramatic increase is projected to occur during the second half of the projection period when the last cohort of the baby boomers turn 66. About 655,100 more people will reach age 65 between 2015 and 2030. With this nearly doubled increase as compared to 2000-2015 period, the overall increase of the population age 65 and over during the 30 year period is expected to be 150 percent. As the older population grows larger, it will also grow more diverse. Non Hispanic White population accounted for almost 92 percent of the senior population in 2000. The share of this group is expected to decrease by 10 percent by 2030. Meanwhile, the pace of increase in the elderly minority population has become very noticeable. The age 65 and over minority population is likely to grow by 450 percent over the 30 year period. Their share to total senior population will increase from 8.5 percent in 2000 to 18.7 percent in 2030.

Population 65 and Over by Non Hispanic Race/Ethnicity

	Total	Non Hispanic White	Minority
2000	662,148	605,917	56,231
2015	1,004,948	870,500	134,448
2030	1,660,075	1,349,674	310,401

Population 65 and Over as Percent of Total Population by Race/Ethnicity

2000	11.2	12.9	4.6
2030	19.4	23.1	11.5

Share of Total 65 and Over Population

2000	100.0	91.5	8.5
2015	100.0	86.6	13.4
2030	100.0	81.3	18.7

Change of Population 65 and Over by Non Hispanic Race/Ethnicity

2000-2015	342,800	264,583	78,217
2015-2030	655,127	479,174	175,953
2000-2030	997,927	743,757	254,170

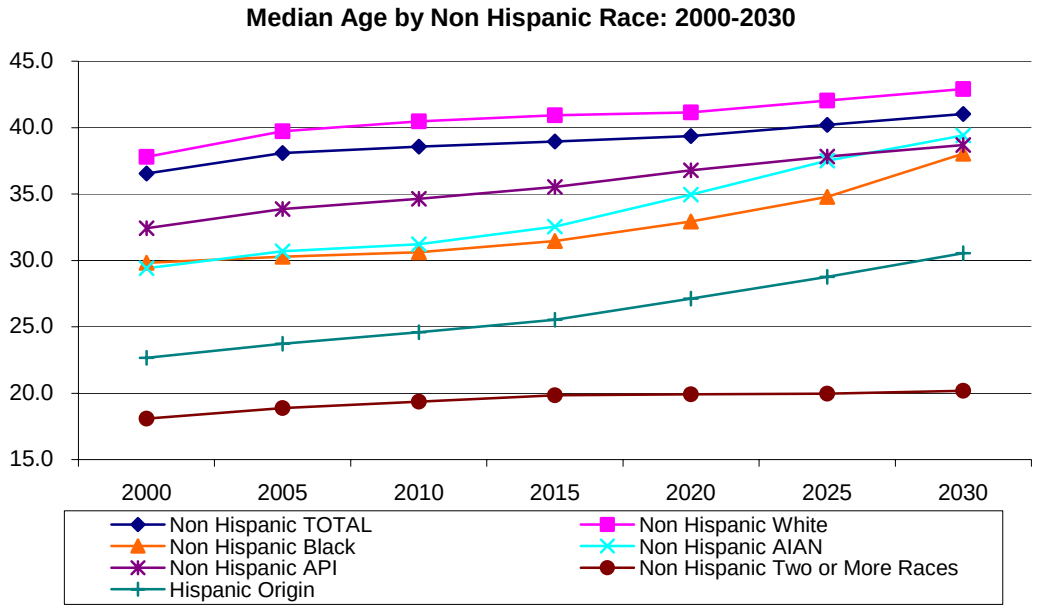
Percent Change by Non Hispanic Race/Ethnicity 2000-2030

2000-2030	150.7	122.7	452.0

Chare of Change by Non Hispanic Race/Ethnicity

2000	100.0	77.2	22.8
2030	100.0	73.1	26.9

Over the next 30 years, the median age for the total population will increase by four years from 35.3 to 39.3 years. Immigrants, who have been playing a major role in the growth of the minority population, tend to be young and labor force age population. They have kept the median age for minority groups lower than that for the total population. However, this phenomenon is likely to change after 2020 when immigration is likely to slow down and the existing minority residents become elderly. While their median age was 29.8 in 2000, by 2030, that for Non Hispanic Black population could be 38.0, only a little over one year younger than the median age for the total population as compared to 5.5 years in 2000. The median age for Non Hispanic AIAN will become ten years older between 2000 and 2030. The Hispanics' median age will go beyond the 30-year mark by 2030. That is an increase of almost eight years from 2000 when the median age for this ethnic group was only 22.7. The multiracial population will stay the youngest over the projection period, since the growth of multiracial is more likely to be the result of interracial marriages (See Table A-2a in Appendix for details).



The Younger Age Group: The 0 to 17-year olds could increase by 29 percent between 2000 and 2030. Approximately 81 percent of the increase will be for the minority population. Hispanic population is expected to experience the most dramatic increase of 76.3 percent, from 177,410 in 2000 to 312,800 in 2030 (See Table A-2b in Appendix for details).

Dependency ratio: The dependency ratio indicates how many children (0 to 17 years old) and elderly (65 and over) there will be for every 100 people of working age (18 to 64 years). The forecasts indicate that between 2005 and 2030, the dependency ratio for the White population will increase from 54 to 77, and the ratio for the minority will change from 63 to 66. While the dependency ratio for the 65 and over population increases for each one of the population groups, the ratio for the young minority group will decrease in 2030.

	Dependency Ratio	
	2005	**2030**
Total	55.9	73.3
Old	17.7	33.7
Young	38.1	39.6
Non Hispanic White	53.9	76.7
Old	20.4	40.8
Young	33.5	35.9
Minority	63.1	66.4
Old	8.3	19.1
Young	54.8	47.3

ISSUES AND PROJECTION DEVELOPMENT

Race/Ethnic Data Comparability and Adjustment Issues

In 1993 OMB undertook a comprehensive review of the categories for data on race and ethnicity. As a result of this review, OMB decided to revise the existing Standards for the Classification of Federal Data on Race and Ethnicity. The fundamental changes between the 1977 Directive 15 and the 1997 revisions are:

1. **The Pacific Islanders are separated from Asians.**
2. **Respondents are allowed to mark more than one race**.

The most challenging issue of producing race/ethnicity projections right now is the incompatibility between base line year census and all the input data required by forecast models. The Census Bureau was the first federal agency to comply with OMB 1997 race classification. Most of the other state and federal agencies, whose data are used in these projections, were not able to reconfigure their system to comply with OMB new categories yet. The best way to deal with this inconsistency is the most important and difficult issue to tackle in these projections. OFM preliminary projections released in 2002 were developed from start to completion using the new OMB 1997 race categories. That is, all of the input data were adjusted to reflect the new categories. Such an approach has a long-term advantage since all the race data collection agencies are in the process to make the conversion and eventually all the data items should be complied with OMB 1997 categories. However, the probability for error is significant when only limited trend data are available to project changes in the components such as birth, death or migration. To keep as much stability as possible in the input datasets, the 2006 projections are produced in old race categories. Once the projections are completed using the old categories, the multiracial population is projected at the end of the process. The assumptions and methods follow.

2000 base year data. 2006 projection starts the process with OMB old race categories. This requires a bridged file with no multiracial category in it. OFM starts with evaluating the existing

bridged file produced by the National Center for Health Statistics (NCHS). To meet their need for calculating birth and death rates, NCHS developed an algorithm to allocate multiracial into the other single race categories at the state and county levels. Since the algorithm was based on national level information, OFM uses its own state population survey from 1998 and 2002, and Behavioral Risk Factor Surveillance System Survey (BRFSS) from the Department of Health (DOH) to examine how representative NCHS estimates are for the race and age specific groups in Washington.

All three surveys contain two sets of race questions. They ask the interviewees to select multiple choices if that suits them. They then ask those who identify themselves with two or more races what single race they would pick if only one choice is allowed. All the single race choices made by multiracial population are cross-tabulated for comparison. The proportions from each survey are then calculated and the average of the three are used to allocate multiracial population in the Census 2000 Modified Race (MR) file. The Census Bureau created the MR file in 2001. The reason to create this file is that the regular census contains "Some Other Race", which is not standard OMB race category and is not allowed in the post censual projections. The MR file has eliminated this "Some Other Race." The following table shows the percentages OFM uses to allocate the three major two races combinations. For three or more race combinations, the equal fraction method is used, since those groups are very small in size.

Final bridging ratios based on WSPS1998-2002 and BRFSS from DOH

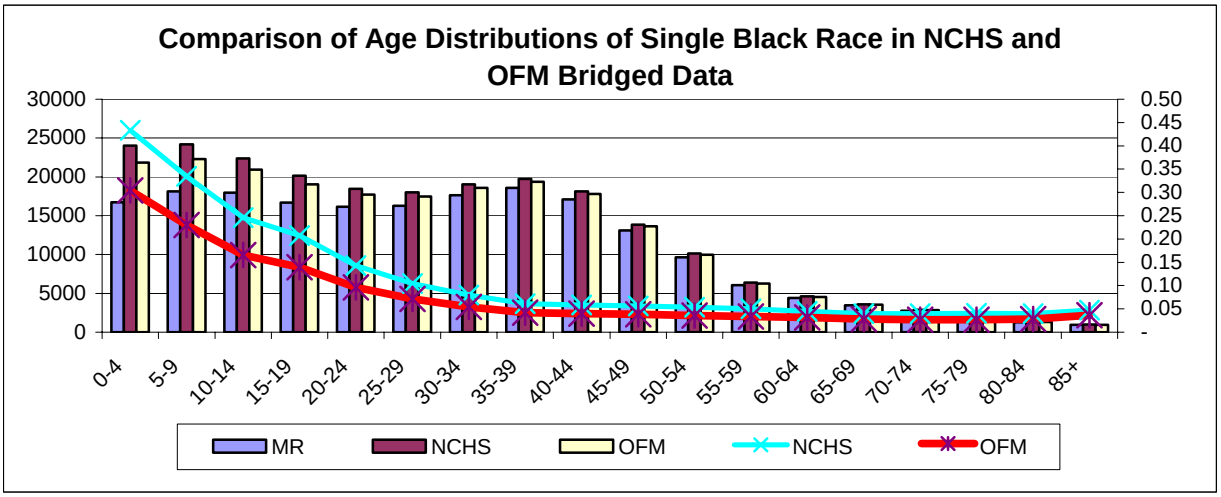
	White	Black	AIAN	API	
White/Black	50.73	49.27			100.00
White/ AIAN	77.27		22.73		100.00
White/API	69.84			30.16	100.00

The following table shows allocation results from NCHS and OFM methods. The differences between the two are significant for the Blacks. There are 43,538 persons in Washington State who selected "Black and Some Other Race" in 2000. OFM method allocates 21,198, about 49 percent into Black. NCHS allocated 30,922, or 71 percent into Black category, about 21 percent more than what the WSPS and BRFSS have suggested. The allocation percentages for persons who are "AIAN and Some Other Race" are fairly close between OFM and NCHS methods. The difference for "API and Some Other Race" group is about 3 percent.

Where the Multiracial Is Allocated To	Race in Combination	Allocated Single Race		Percent of Allocated Single Race	
		NCHS	OFM	NCHS	OFM
Black	43,538	30,922	21,198	71.02	48.69
AIAN	63,752	15,073	16,208	23.64	25.42
API	69,667	25,657	23,625	36.83	33.91

How the multiracial population is distributed into each of the 18 age groups is crucial for the projections. The following chart compares the age distribution from NCHS and OFM bridged files and the 2000 MR file. The columns in the chart are the number of people in each of the three files. The lines indicate the percent changes due to NCHS or OFM allocation. There are

24,012 0-4 year old persons in the NCHS file. When comparing to Black alone in Census 2000 MR file, it is an addition of 43 percent. The NCHS file shows 24,183 persons in the 5-9 age group, which is an increase of 33 percent when compared to the corresponding group in the 2000 MR file. Such a large increase in younger age groups can result in unrealistic growth in the subsequent age cohorts in the future.



The analysis of the age distribution can be carried one step further by computing the median age. This measurement indicates the central tendency of a particular age distribution. Median age is computed based on NCHS and OFM bridged data and compared to medium age from 1990. The table to the right shows the results. When the median age for the Black population in 1990 was 26.26, NCHS has only aged this racial group by 0.37 years over a decade as a result of their allocation of the multiracial population. This analysis suggests that the OFM method has produced an estimate that is more likely to represent the race distribution in Washington State. And, it is hence being used in the current projection.

2000 Median Age

	Black	AIAN	API
MR	29.26	28.30	32.18
OFM	27.40	28.03	31.30
NCHS	26.63	27.64	31.07

1990 Median Age

	26.26	25.55	28.38

Change between 1990-2000

MR	3.00	2.75	3.80
OFM	1.14	2.48	2.92
NCHS	0.37	2.09	2.69

Methodology

The projection is produced with the cohort component accounting system:

$P_1 = P_0 + B_{t-t+5} - D_{t-t+5} + M_{t-t+5}$
Where: P_1 = population at the end of the period
P_0 = population at the beginning of the period
B_{t-t+5} = births during the period
D_{t-t+5} = deaths during the period
M_{t-t+5} = net migration during the period

Each component is projected separately and controlled within the framework of the state population forecast. Details about the fertility, mortality and migration assumptions are described in the following sections.

Projecting the Multiracial Population

The multiracial population is projected at the end of the projection process. No particular component assumptions are made for this group except the growth rate for the 0-4 year old in each projection period. The difference between the OFM bridged file for 2000 and the 2000 MR file is calculated and used as the bench mark data. This data keeps the race from which multiracial population is extracted. Then for each projection period, the forward survival method is used to get survived multiracial population for each five-year age group and each five-year projection cycle. The 0-4 year old is projected based on two factors: the ratio of 0-4 year old multiracial to the 0-4 year old total in 2000, and the decade change of multiracial children. The ratio is applied to the 2000-04 total births to get the 2005 0-4 year old multiracial population. The decade change comes from the PUMS files. The 1990 and 2000 PUMS files are used to extract own children 0-4 from each household whose parents are of different races. The ten-year growth rate is found at 58 percent. The average annual growth rate for multiracial at the national level is at 3.2 percent between 2000-2004. The latter is used to adjust the rate calculated from PUMS. During the first projection period, 0-4 year old multiracial population is likely to grow by 37 percent. Between 2010-2020, they are projected to increase by 50.5 percent. For the last projection period, they could increase by 69.2 percent. Once the multiracial population is projected, they are subtracted from the projection in OMB old race categories produced earlier to derive the projection in OMB new race categories.

Fertility Assumptions for Race/Ethnic Groups

Based on national and state trends and fertility surveys results, there is no indication that high fertility rates will return. Hispanic women show much higher fertility rates currently. But, it is assumed that once they enter the main stream of American life, they will adopt the life style of women as a whole. Their fertility rates will decline in the future. For this projection, age specific fertility rates (ASFR) by race are calculated for the 2000 to 2004 period. The ASFR forms the basis for the forecast of fertility for each race/ethnic group. The sum of all ASFR across ages for a given period is the total fertility rate (TFR), which indicates the number of children each woman can expect to have by the end of her childbearing years. The race/ethnicity specific TFR are controlled by the state fertility forecasts, which expect no dramatic fertility

increase or decrease. For the long-range projections, the child-woman ratio (children under 5 to women 15-49) is also used to adjust the fertility rates for projections after 2015. Although the TFR for the total population and for the various race/ethnic groups are not expected to increase dramatically, the API and Hispanic populations are still expected to have large numbers of births. This is because both groups have a relatively large increase of women at the childbearing age over the forecast horizon.

Mortality Assumptions for Race/Ethnic Groups

The state forecasts by race and ethnic groups project the mortality rates based on the Bureau of the Census projections of steady but slow increase in life expectancy. Women are expected to live longer than men. This assumption is held true across all the race/ethnic groups. Though the life expectancy increases, the number of people in older age groups also increases, thus higher numbers of deaths results. The white population has the largest number of deaths, because this is the largest racial group and comprises a relatively high percent of elderly people where the mortality is high.

It is assumed that Washington mortality patterns follow those of the nation. The 2000 race/ethnicity specific life tables constructed by NCHS are used in conjunction with life tables constructed with the Robert Sheone Basic Life Table Method to calculate life expectancy for each race and ethnic group. The 2000-2004 number of deaths by five-year age group and by race/ethnicity is from the state Department of Health. Once the probability of each age specific population cohort surviving to the next age group is calculated, these values are used to estimate the mortality rates, which then are used to calculate the deaths for each projection year.

Migration Assumptions for Race/Ethnic Groups

International migration and domestic migration are projected separately. This is because some of the racial and ethnic groups have immigration volumes that are larger or smaller than those found in the White population. The migration assumptions in the 2002 projection were based on 1990 census migration, because the migration information for 2000 had not become available. There were extremely large volumes of API immigrants in the 1980 and early 1990 periods. One of the assumptions was that the rippling effects of large volume of immigration from Asian and Pacific Islander countries would continue to be strong for a decade and then would start to decrease.

According to the 2000 census, nearly 61 percent of the API populations are foreign born. Immigration level has maintained at the same high level as in the 1990's. Therefore, in this projection the high immigration level for API population has been extended to over 2020. Then it is assumed to progressively decrease, due to the rapid economic growth in Asian countries. The Hispanic population is projected to continue to have constant level of net immigration over the projection horizon. The total number of future domestic migrants is developed within the net migration framework of the state forecast.